

REMARKS

Claims 1-10 remain in this application. Non-elected claim 11 is canceled. Entry of this Amendment and reconsideration of the application are requested.

It is respectfully submitted that the drawings attached to the Reply filed March 3, 2003, satisfy the requirement set forth in section 4 on pages 2-3 of the Office Action. Clean copies of these drawings are also appended to this Amendment.

Claims 1-10 are again rejected as being unpatentable over U.S. Patent 5,892,146 to Kobayashi et al. in view of U.S. Patent 5,631,415 to Igarashi et al. Reconsideration is requested.

The Kobayashi et al. air flow meter and the Igarashi et al. air flow rate measuring device both have a partly bent wall at an upstream side of a detection element. Neither the Kobayashi et al. nor the Igarashi et al. measuring device, however, has a bent passage. Claim 1 distinguishes the invention from the Kobayashi et al. and Igarashi et al. configurations by reciting "a bent portion at least upstream of the detection element."

Further, neither the Kobayashi et al. air flow meter nor the Igarashi et al. air flow rate measuring device has more than one set of temperature measuring and heating resistors, and the Kobayashi et al. and Igarashi et al. devices can not differentiate forward air flow from back flow.

The sensor of Kobayashi et al. cannot detect back flow. More particularly, the sensor cannot detect a direction (column 3, line 67 to column 4, line 4) and, if the sensor detects back flow, a jump-up phenomenon is produced, and a detection error is enlarged. It is apparent from the legend "OCCURRENCE OF BACK FLOW" in Figure 4b that the sensor can not detect the back flow. In order to reduce a jump-up

phenomenon caused by back flow, the structure is made such that, because of the L-shaped sub-passage, back flow is not introduced (column 5, lines 52 to 56). It is apparent from the legend "NO-ENTRANCE OF BACK FLOW" in Figure 4a that the back flow is not introduced, and it is apparent that the same is applicable to the diagram shown in Figure 4b. Since the Kobayashi et al. meter can not detect direction, the detecting error is reduced by preventing the back flow from being introduced. It is apparent that the detection error is enlarged due to the jump-up phenomenon when a back-flow introducing means is provided in a structure which can not detect direction in accordance with the present invention.

Further, the Kobayashi et al. meter does not have a bent portion upstream of the sensing element as is present in this invention. Figure 1 of the Kobayashi et al. patent shows a bent portion upstream of the heating resistor 3 of the sub-passage. However, as is apparent from Figure 2, the heating resistor 3 corresponding to the sensing element is visible from the upstream side, and dust and dirt directly collide with that sensing element. The sensing element will break due to the collision of dust, and the flow rate property will change due to attachment of dirt to the sensing element. The Kobayashi et al. configuration does not have a bent portion of a sub-passage which is adapted to prevent the sensing element from breaking due to the dust collision and which prevents the flow rate property from being changed due to attachment of dirt as is the case in the present invention. In the Kobayashi et al. flow meter, since the shape of the sub-passage is L-shaped, it is apparent that a bent portion is not provided upstream of the sensing element. The present invention is different from Kobayashi et al. air flow meter in terms of both structure and effect.

It is an object of the Igarashi et al. patent to reduce the flow rate error due to a deviation in flow rate distribution (drift) within the intake pipe. The present invention, by contrast, aims to introduce the back flow into the sub-passage, and differs from the Igarashi et al. measuring device in terms of both structure and effect, that is, the bent portion, back-flow error reduction, flow rate change prevention, and so on, in the same manner as it differs from the Kobayashi et al. meter. Accordingly, the Kobayashi et al. and Igarashi et al. disclosures, taken as a whole, do not suggest the invention as presently defined by claim 1.

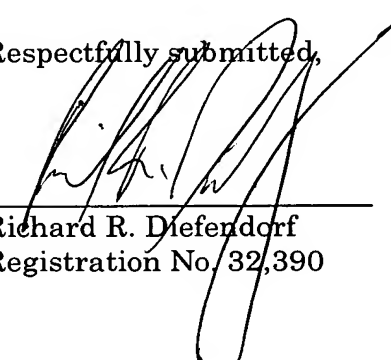
It is respectfully submitted that currently amended claim 1 is patentable for reasons discussed above. Dependent claims 2-10 are patentable as well.

This application will be allowable after entry of this Amendment for reasons discussed above. Entry of the Amendment and reconsideration of the application are again requested.

Should the Examiner have any questions after considering this Amendment, the Examiner is invited to telephone the undersigned attorney.

Date: April 27, 2004

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